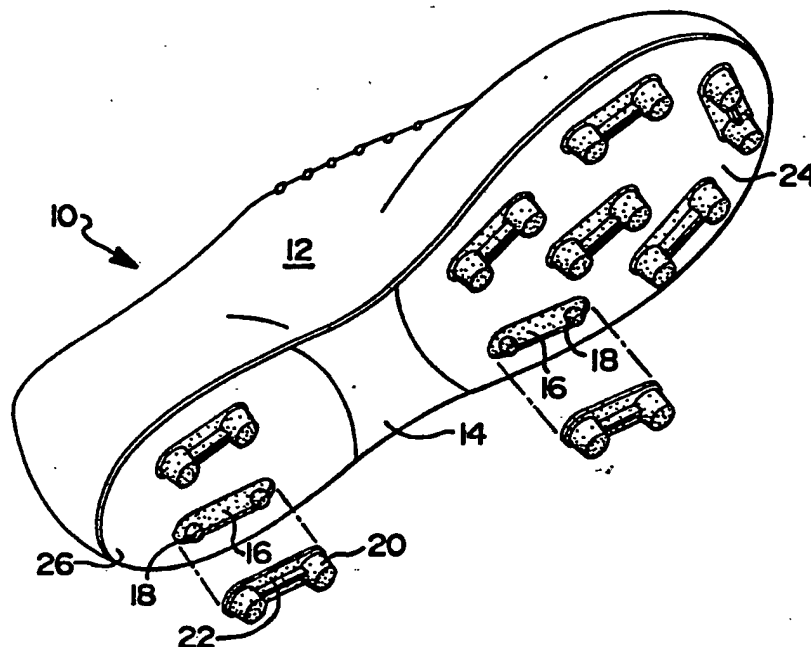




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(54) Title: ATHLETIC SHOE HAVING BREAK-AWAY PORTIONS
**(57) Abstract**

An athletic shoe (10) having break-away cleats on the shoe sole (14) including releasably engageable connection units (18) portions (24 and 26) of the sole.

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ATHLETIC SHOE HAVING BREAK-AWAY PORTIONSTECHNICAL FIELD

5 This invention relates generally to safety athletic foot wear having break away sole or cleat portions, and more particularly relates to break away sole or cleat portions on an athletic shoe which respond to particular load restrictions and exhibit shearing of the break away sole or cleat portions upon a significant lateral force.

BACKGROUND OF THE INVENTION

10 Previous athletic shoes which have been designed to reduce soft tissue injury have included soft cleats which will bend, or a particular configuration of cleats designed to reduce injury. These other shoes have not succeeded in preventing injuries. This can be seen
15 because there are still approximately 200,000 injuries per year to the knee and ankle ligaments of athletes. Athletic cleated shoes are inherently dangerous because they grip the ground and do not allow the athlete's foot to follow the course it would normally follow when a blow
20 is applied to the athlete's lower extremities. This causes torque stresses and lateral strains on the legs of the athlete. These strains often lead to ligament damage requiring surgery and tendon augmentation. With the consequent incidence of pain and incapacity, there are
25 millions of man-days lost at work, as well as millions of dollars spent on repairing these athletic injuries. The annual surgical cost of repairing the knees of American high school football players is more than \$50,000,000.00. Also, recovering patients undergo several weeks of post-operative immobilization followed by graduated
30 rehabilitation regiments lasting from several weeks to several months. In the event of anterior cruciate

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ligament injuries, the most common knee injury, full recovery is the exception.

5 Therefore, a stress reduction system is required which will allow the athletes foot to "give away" under predetermined forces which prevent harm to soft tissues and which does not compound previous injuries caused by the initial accident.

10 Athletes today also tape their shoes to their feet to give their ankles maximum support. The taping has sufficiently reduced ankle injuries, however, it has caused the forces which would have been absorbed by the ankle to translate up toward the knee thereby injuring the knee ligaments. A review of the literature about prophylactic taping of ankles along with the use of other
15 ankle supports has shown an increase incidence of knee injuries. Because prophylactic ankle taping has limited lateral mobility without interfering with the flexion and extension of the shoes, the athletes have received the ideas of taping rather well. In most cases they are
20 unaware, however, of the increased risks to their knee ligaments.

Laterally placed prophylactic knee bracing has been studied during practice sessions and football games, as well as other sports activities. It has been found
25 that the incidence rates of knee injuries were actually higher when the braces were worn compared to the same activities being performed when knee braces were not worn. Furthermore, the use of the braces was associated with increased episodes of muscle cramping in the triceps
30 surae muscle groups, which required the constant attention of coaches and trainers to remind the players to wear the braces and to apply them correctly. This

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constant attention proved to be rather costly, and the braces have been dropped by many college and professional sports teams.

5 In addition, ankle injuries in the young athlete clearly exhibit the extreme difference between adult and childhood sport injuries. It has been found that ligaments in the skeletally immature athlete are stronger than the bones, so that ligament and other soft-tissue injuries are rare. With the tremendous increase
10 in childhood and adolescent involvement in organized competitive athletics, the percentage of growth plate injuries attributable to sport is on the increase. Specifically, football, skateboarding, basketball, skiing, gymnastics and ice skating have increased
15 dramatically. It would be most advantageous to provide shoes and foot supports for all of these athletic activities which would give way under certain forces in order to prevent the growth plate injuries which are currently being experienced.

20 The inventor of the present invention does not know of any examples of any previous attempt to provide a break away shoe in order to substantially reduce ankle and knee injuries. Several shoes have been made with replaceable soles for various other reasons, however.

25 As discussed above, it would be advantageous for an athlete to have available to him or her a break away shoe such that substantial ankle and knee injuries would be substantially reduced. Therefore, it is a primary object of the present invention to provide an
30 athletic shoe device which is responsive to lateral load forces in order to shear off break away sole portions from an upper shoe body.

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It is another object of the present invention to provide an athletic shoe device which includes break away cleats, again responsive to a predetermined lateral load force, so that the cleats will break away from the shoe if the athlete is hit very hard.

It is yet another object of the present invention to provide an athletic shoe device which includes a hingeably mounted cleat portion which will hinge up toward the sole upon the application of a pre-specified lateral load force such that substantial injuries to the knee and ankle of wearer will be reduced.

SUMMARY OF THE INVENTION

In accordance with the preferred embodiment of the invention, these and other objects and advantages are addressed as follows.

An athletic shoe having break-away cleats on the shoe sole is disclosed which includes an upper shoe body having a sole attached thereto with releasably engageable adhesive connection units attached to at least portions of the sole. At least one complementary mating cleat base is releasably engaged to the sole. At least one cleat is attached thereto, with the cleat base having a mating adhesive connection unit adapted for releasably engaging the at least one cleat base to the adhesive connection units attached to the sole of the upper shoe body. Thus, the respective complementary mating connection units attached to the shoe sole and the at least one cleat base are sequentially disposed for releasably engaging the at least one cleat base to the portions of the sole also having adhesive connection units so that the cleat bases will sequentially sever across the shoe sole in response to a substantially

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lateral loading force at least equal to the total shear breakaway force of individual pairs of the interlocking connection units, whereby low non-injury potential lateral forces subject the connections to sufficient shear loading to deform the connection units and sequentially break the interlocking connections so that the at least one cleat base, and consequently the at least one cleat attached thereto, is broken away from the shoe sole in a substantially lateral direction only.

Further disclosed are the load forces which are required to shear off the cleat base from the sole, as well as the materials made, their configurations and other requirements.

In another embodiment of the present invention, an athletic shoe having hinged cleats on the bottom of the shoe is disclosed which includes an upper shoe body having a sole attached thereto with at least one hingeably mounted cleat unit attached to at least a portion of the sole. At least one complementary mating cleat base having the at least one hingeably mountable cleat unit attached thereto is hingeably mounted to the shoe. A cleat base having a hinged connection unit adapted for hingeably engaging the at least one cleat unit to the sole of the upper shoe body is attached to the sole. Upon the application of a predetermined amount of force, the cleat will hinge up toward the sole of the shoe, thereby substantially reducing injuries caused by the cleat catching in the dirt or other surface while the athlete is being hit by a fellow player.

In yet another embodiment of the invention, another athletic shoe is disclosed which includes break-away shoe sole portions. This embodiment includes an upper shoe body having a first sole attached thereto

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with releasably engageable adhesive connection units attached to at least portions of the first sole. At least one complementary mating second sole portion having at least one mating adhesive connection unit is adapted
5 for releasably engaging the at least one second sole portion to the adhesive connection units attached to the first sole of the upper shoe body. Various specifics of the shoe are detailed, along with the materials used and the fastening configurations.

10 BRIEF DESCRIPTION OF THE DRAWINGS

The nature and extent of the present invention will be clear from the following detailed description of the particular embodiments thereof, taken in conjunction
15 with the appendant drawings, in which:

FIGURE 1 shows a perspective view of the inventive device constructed in accordance with the present invention, wherein the athletic shoe is shown as having releasably engageable cleat units fastened to the
20 sole of the shoe body;

FIGURE 2 illustrates a bottom plan view of the shoe of Figure 1, illustrating the placement of the cleats;

FIGURE 3 is a cross-sectional view of one possible connection unit configuration showing
25 interlocking parts;

FIGURE 4 is a cross-sectional view of another embodiment of the connection units showing cleats in place;

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FIGURE 5 is a cross-sectional view of yet another embodiment of the connection unit showing interlocking portions;

5 FIGURE 6A shows a top plan view of a second sole portion to be attached to a first sole attached to the upper shoe body;

FIGURE 6B shows a top plan view of a second sole portion to be attached to the front portion of the shoe;

10 FIGURE 6C is a bottom plan view of the first sole showing the placement of the fastening means;

FIGURE 7A is a top plan view of a second sole portion heel showing the relative placement of the connection units;

15 FIGURE 7B is a top plan view of the second shoe portion to be attached to the front of the shoe of Figure 7C;

FIGURE 7C is a bottom plan view of the upper body shoe having a sole attached thereto;

20 FIGURE 7D is a cross-sectional side view of a connection unit used to fasten the second sole portions to the first sole;

FIGURE 8 is a cross-sectional view of another embodiment of the fastening connection unit; and

25 FIGURE 9 is a top plan view of the fastener of Figure 8.

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DETAILED DESCRIPTION OF THE INVENTION

Referring first to figure 1, an athletic shoe is generally denoted by the numeral 10. The athletic shoe 10 includes an upper shoe body 12. The sole 14 of the shoe 10 includes recessed areas 16 with male connecting unit portions 18. The cleats 20 are attached to cleat bases 22 which may then be attached to recessed areas of the sole portions 24 and 26. A bottom plan view, as shown in figure 2 shows the relative placements of the sole portions 24 and 26, as well as the cleats 20 and cleat bases 22. The recessed area 14 may be used to contain taping of the shoe which is common among athletes. As the tape may be placed over recessed area 14, it does not interfere with the break away action of the cleats and cleat bases 20 and 22, respectively.

In order to achieve the break away feature of the cleat embodiment of the present invention, figure 3 shows one configuration of a releasably engageable adhesive connection unit which is attached to at least portions of the sole and at least one complementary mating cleat base. The cleat base has at least one cleat attached thereto, and also has a mating adhesive connection unit adapted for releasably engaging the at least one cleat base to the adhesive connection unit attached to the sole of the upper shoe body.

Figure 3 shows a recessed portion 32 with the male protrusion 34 attached to the sole 30 of the shoe. The mating cleat 36 is shown having a female indentation 38 to mate with the male protrusion 34.

Figure 4 illustrates another embodiment of the cleat portion showing metallic cleats 40. The cleats 40 may be hingeably attached to either the cleat base or may

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be attached directly to the shoe sole as is shown in figure 4. The ball socket shown at the top of cleat 40 is secured into the cleat material and is held to a degree which will release upon impact with a certain
5 predetermined lateral load force.

Figure 5 shows another embodiment of the releasably engageable adhesive connection unit as it is molded into sole 42 with recessed area 44. The male protrusions 46 have a voided area 48 which is designed to
10 compress as the male protrusion 46 is squeezed into the recessed area 52 of cleat base 50.

Referring now to figures 6A through 6D, there is shown a second embodiment of the present invention which includes break-away sole portions 70 and 74
15 including fasteners 72. Fastener 72 may be of many configurations, including, but not limited to the fastening configurations disclosed in figures 3, 4, 5, 8 and 9, as well as a hook and loop fastening means, such as VELCRO, a registered trademark of the Velcro
20 Corporation, or Dual Lock, a trademark of the 3-M Industrial Specialties Division. Figure 6C shows the placement of the engageably adhesive connection units in placed on sole 66 in heel region 62 and front region 64. The connection units 68 are designed to mate with the
25 connection unit 72 shown in figures 6A and 6B. The amount of connection units which are utilized in this embodiment may be tailor made for specific weight and medical requirements for individual athletes in order to "program" the amount of lateral load force which can be
30 applied before the second sole portion breaks away from the first sole which is attached to the upper shoe body. Second sole portions shown in figures 6A and 6B are separate pieces to enable the athlete to tape his shoe to his foot over recessed area 66. Figure 6D shows how the

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5 sole 76 includes connecting units 82, while the second
sole portion 78 includes its complementary mating
connection units 80. The frequency of occurrence of the
connection units 82 will determine the amount of shear
10 strength which will be required to tear the second sole
portion from the first sole portion. For instance, if
the connection units 82 were the same size as the
connecting unit 80 on second sole portion 78, a much
greater shear strength would be required to break away
the second sole portions than it would if connecting
units 82 were smaller in size in comparison to the
connecting units 80 of the second sole portion.

15 Looking now to figures 7A through 7D, there is
shown yet another embodiment of the present invention in
which second sole portions as shown in figures 7A and 7B
may be attached to the first sole as shown in figure 7C
attached to the upper shoe body (not shown). Figure 7A
illustrates the heel portion 110 which includes
connecting units 112 for mating with the complementary
20 connection units 108 shown on heel portion 102 of the
first sole. Likewise, figure 7B shows a second sole
portion 114 having connection units 112 which may mate
with complementary sole portion 104. Connection unit 108
of the first sole 100 will mate with complementary
25 connecting units 112 as shown in figure 7B. In this
embodiment, it is envisioned that it is possible for the
connection interlock shown in figure 7D to be employed.
The shoe sole 116 has a male protrusion which will mate
and interlock into recessed area 119 of the second sole
30 portion 118.

Referring now to figure 8, a separate
embodiment of the connection unit is illustrated in which
the surface of the first sole 120 includes a male
protrusion 121 which is designed to be incorporated into

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recessed areas 128 of the cleats 123. A separate spring 122 is attached to the cleat portion 123 in such a way as to form a void 124 such that when male protrusion 121 is forced into recessed area 128 the spring 122 can respond by flexing into the void 124. Figure 9 shows a top plan view of the cleated connection unit of figure 8, in which the cleat 123 is shown with spring 122 in place. Spring 122 may include slits 125, and may include either a removed portion 126, or a solid portion 127, depending upon the strength of the spring required. The low profile shape of the male protrusion 121, in relationship to first sole 120, will allow for a better surface for energy reduction once release has occurred. Release is achieved by the floating spring 122 that is molded separately from cleat 123. The spring may be bonded to the cleat by sonic welding, or any other standard means of attachment. Free movement independent from the spring retention action when male protrusion 121 is inserted or released from recessed area 128 is accomplished by the void slot 125.

The releasably engageable adhesive connection units as shown above will have a peel strength and a shear strength in order to break away before about 350 to 950 Newtons of force would be translated to soft tissues in and around the knee. The soft tissues which we desire to protect include the anterior cruciate, posterior cruciate, medial collateral and lateral collateral ligaments.

The mating releasably engageable adhesive connection units may include an interlocking pair of fasteners as shown in the drawings which may be made from a material selected from the group consisting of rubbers, plastics, thermoplastics, elastomers, elastomeric resins and urethanes. Further, as shown above, it may be

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preferably to include adhesive connection units which include male and female complementary physical connections which interlock to provide an adhesive fastener such that the tensile strength is much greater
5 than the shear or peel strength.

Therefore, a substantial lateral force upon the leg of the athlete wearing the athletic shoe will cause the male and female interlock connection unit to shear apart, and consequently to break away from the sole
10 attached to the upper shoe body. This will substantially reduce soft tissue injury to the knee and ankle of the wearer of the shoe. It is preferable to include male protrusions in the first sole, and female indentations in the cleat units or in the second sole portion which is
15 thereafter attached to the sole of the upper shoe body.

In the embodiment which discloses the detachable cleat, the cleats should be removable with the same amount of force which is required to reduce soft tissue injury as in the embodiment with the removable
20 sole portions.

The fastening strength capability of the connection units may be individually selected in response to the individual weight or certain medical requirements of the athletic shoe wearer, so that the shear and peel
25 strength may be individually responsive and dependent upon the predetermined break away force in order to substantially reduce injuries.

In the embodiment which discloses a hingeably mounted cleat unit attached to at least a portion of the sole attached to the upper shoe body, at least one
30 complementary mating cleat base having at least one

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hingeably mountably cleat unit attached thereto is adapted for hingeably engaging the cleat unit to the sole of the upper shoe body.

5 Thus, there is provided in accordance with the present invention, several embodiments of an athletic shoe with either break away portions, or a hinge away cleat in order to prevent substantial injury to the ankle and knee of the athletic shoe wearer.

INDUSTRIAL APPLICABILITY

10 The industrial applicability of the present invention includes athletic footwear used in any athletic activity, particularly in any turf sport (including, but not limited to soccer, rugby, American-style football and baseball), having the potential for blows or impacts to
15 the lower extremities of an athlete. The present invention reduces the likelihood or severity of soft tissue injuries during such activity or sport.

20 While my invention has been described in terms of several specific embodiments, it must be appreciated that other embodiments could readily be adapted by one skilled in the art. Accordingly, the scope of my invention is to be limited only by the following claims.

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WHAT IS CLAIMED IS:

1. An athletic shoe having break-away cleats on the shoe sole, comprising:

5 an upper shoe body having a sole attached thereto;

 releasably engageable adhesive connection units attached to at least portions of the sole; and

 at least one complementary mating cleat base having at least one cleat attached thereto, said cleat
10 base having a mating adhesive connection unit adapted for releasably engaging the at least one cleat base to the adhesive connection units attached to the sole of the upper shoe body,

 whereby the respective complementary mating
15 connection units attached to the shoe sole and the at least one cleat base are sequentially disposed for releasably engaging the at least one cleat base to the portions of the sole also having adhesive connection units so that the cleat bases will sever across the shoe
20 sole in response to a substantially lateral loading force at least equal to the total shear breakaway force of individual pairs of said mating connection units, whereby low non-injury potential lateral forces subject the connection units to sufficient shear loading to deform
25 the connection units and sequentially break the mating connections so that the at least one cleat base, and consequently the at least one cleat attached thereto, is broken away from the shoe sole in a substantially lateral direction only.

30 2. The athletic shoe of claim 1, wherein said releasably engageable adhesive connection units will have a peel strength and a shear strength in order to break away before about 350 to 950 Newtons of force would be translated to soft tissues in and around the knee, said

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soft tissues including the anterior crucient, posterior crucient, medial collateral and lateral collateral ligaments.

3. The athletic shoe of claim 1, wherein said
5 mating releasably engageable adhesive connection units include an interlocking pair of fasteners made from a material selected from the group consisting of rubbers, plastics, thermoplastics, elastomers, elastomeric resins and urethanes.

10 4. The athletic shoe of claim 1, wherein the releasably engageable adhesive connection units attached to the sole and the at least one complementary mating cleat base include male and female complementary physical connections which interlock to provide an adhesive
15 fastener such that the tensile strength of said fastener is much greater than the shear or peel strength of said fastener, so that a substantial lateral force upon the leg of the athlete wearing the athletic shoe will cause the male and female interlock connection unit to shear
20 apart, and consequently to break away from the sole attached to the upper shoe body, thereby substantially reducing soft tissue injury to the knee and ankle of the wearer of the shoe.

25 5. The athletic shoe of claim 4, wherein said male and female interlocking connection units include male protrusions in the sole, and female indentations in the cleat units.

30 6. The athletic shoe of claim 1, wherein said releasably engageable adhesive connection units include hook and loop fasteners.

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7. The athletic shoe of claim 1, wherein said
releasably engageable adhesive connection units attaching
the cleat base having a cleat attached thereto to the
sole of the upper shoe body breaks away from the upper
5 shoe body sole in response to lateral load stresses which
translate to stresses in the anterior crucient, posterior
crucient, medial collateral and lateral collateral
ligaments of between about 350 and 950 Newtons.

8. The athletic shoe of claim 1, wherein the
10 fastening strength capability of said connection units
may be individually selected in response to the
individual weight or other medical requirements of the
athletic shoe wearer, so that the shear and peel strength
may be individually responsive, and dependent upon the
15 predetermined break away force in order to substantially
reduce injuries to the soft tissues of the individual
wearer of the shoe.

9. The athletic shoe of claim 1, wherein the
tensile strength remains sufficiently high to keep the
20 cleat bases attached to the sole of the upper shoe body,
while being responsive to lateral load forces being
applied against the leg of the wearer, so that the
lateral load force response will break away the cleat
base, with the cleat attached thereto, and thereby
25 substantially reduce soft tissue injury to the wearer of
the shoe.

10. An athletic shoe having break-away shoe
sole portions, comprising:
an upper shoe body having a first sole attached
30 thereto;
releasably engageable adhesive connection units
attached to at least portions of the first sole; and

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at least one complementary mating second sole portion having at least one mating adhesive connection unit adapted for releasably engaging the at least one second sole portion to the adhesive connection units attached to the first sole of the upper shoe body,

5 whereby the respective complementary mating connection units attached to the shoe sole and the at least one second sole portion are sequentially disposed for releasably engaging the at least one second sole
10 portion to the first sole also having adhesive connection units so that the second sole portion will sequentially sever across the first shoe sole in response to a substantially lateral loading force at least equal to the total shear breakaway force of individual pairs of the
15 interlocking connection units, whereby low non-injury potential lateral forces subject the connections to sufficient shear loading to deform the connection units and sequentially break the interlocking connections so that the at least one second sole portion is broken away
20 from the first sole attached to the upper shoe body in a substantially lateral direction only.

11. The athletic shoe of claim 10, wherein said releasably engageable adhesive connection units will have a peel strength and a shear strength in order to
25 break away the second sole before about 350 to 950 Newtons of force would be translated to soft tissues in and around the knee, said soft tissues including the anterior crucient, posterior crucient, medial collateral and lateral collateral ligaments.

30 12. The athletic shoe of claim 10, wherein said mating releasably engageable adhesive connection units include an interlocking pair of fasteners made from a material selected from the group consisting of rubbers,

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plastics, thermoplastics, elastomers, elastomeric resins and urethanes.

13. The athletic shoe of claim 10, wherein the releasably engageable adhesive connection units attached to the first sole and the at least one complementary mating adhesive second sole portion include male and female complementary physical connections which interlock to provide an adhesive fastener such that the tensile strength is much greater than the shear or peel strength, so that a substantial lateral force upon the leg of the athlete wearing the athletic shoe will cause the male and female interlock connection units to shear apart, and consequently to break away the second side portion from the first sole attached to the upper shoe body, thereby substantially reducing soft tissue injury to the knee and ankle of the wearer of the shoe.

14. The athletic shoe of claim 13, wherein said male and female interlocking connection units included male protrusions in the sole, and female indentations in the second sole portion.

15. The athletic shoe of claim 10, wherein said releasably engageable adhesive connection units include hook and loop fasteners.

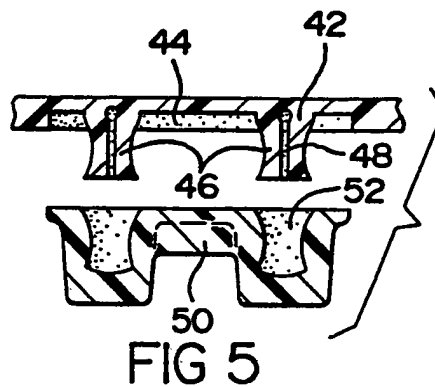
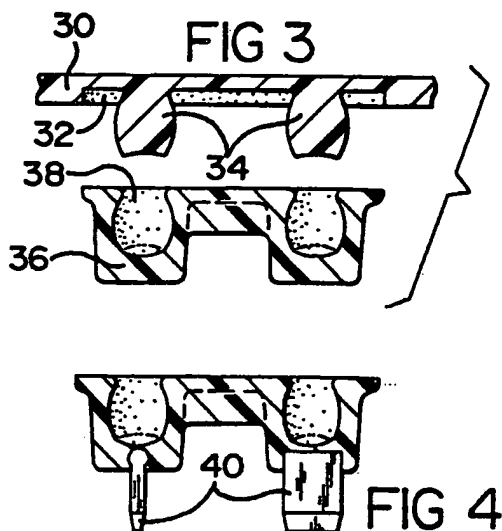
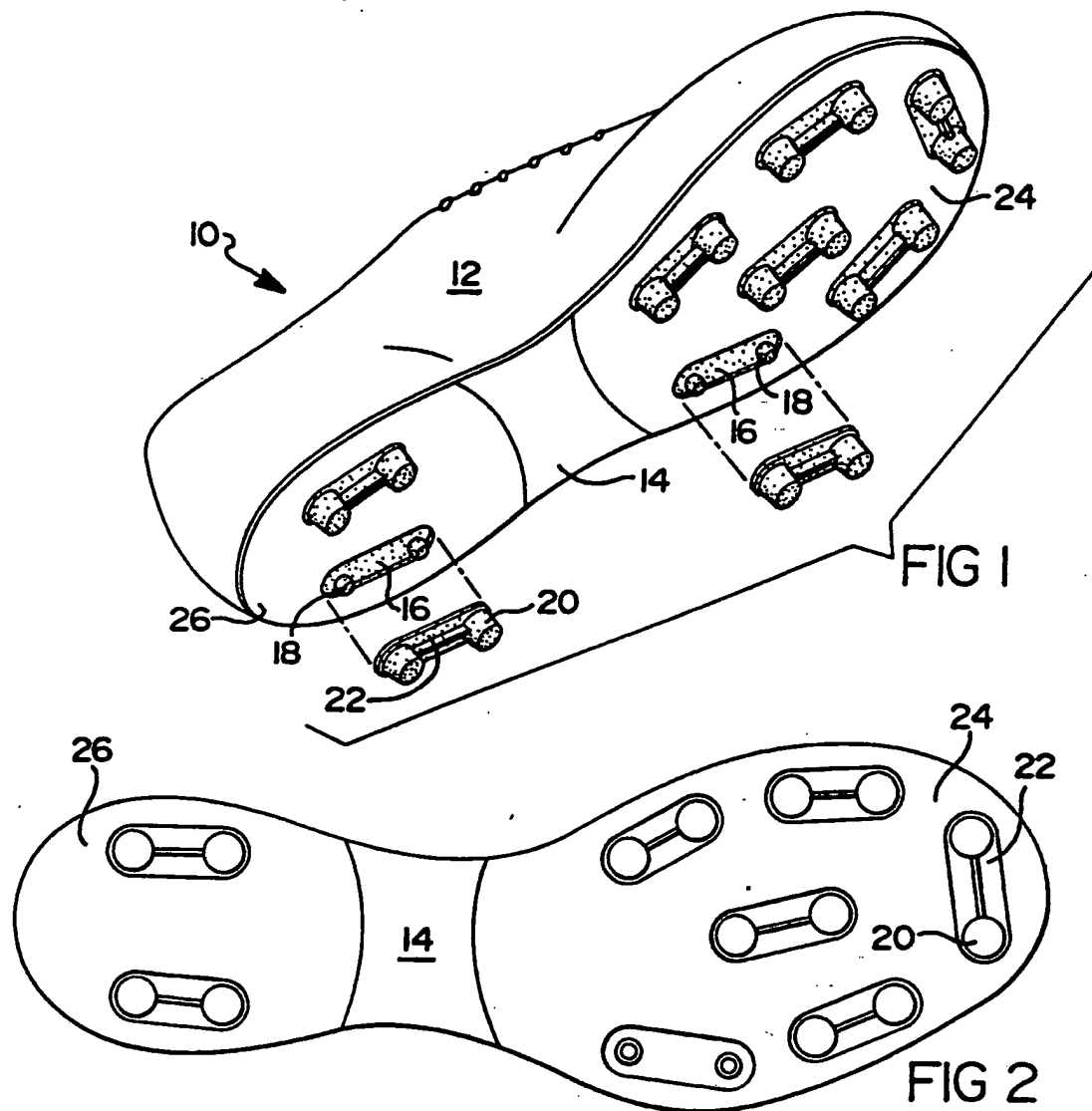
16. The athletic shoe of claim 10, wherein said releasably engageable adhesive connection units attaching the second sole portion to the first sole of the upper shoe body breaks away from the upper shoe body first sole in response to lateral load stresses which translate to stresses in the anterior crucient, posterior crucient, medial collateral and lateral collateral ligaments of between about 350 and 950 Newtons.

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17. The athletic shoe of claim 10, wherein force required to break the second sole portion from the first sole may be individually selected in response to the individual weight or other medical requirements of the athletic shoe wearer, so that the shear and peel strength may be individually responsive, and dependent upon a predetermined break away force in order to substantially reduce injuries to the soft tissues of the individual wearer of the shoe.

18. The athletic shoe of claim 10, wherein the tensile strength remains sufficiently high to keep the at least one second sole portion attached to the first sole of the upper shoe body, while being responsive to lateral load forces being applied against the leg of the wearer, so that the lateral load force response will break away the second sole portion and thereby substantially reduce soft tissue injury to the wearer of the shoe.

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FIG 6A

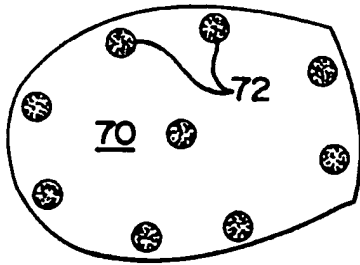


FIG 6B

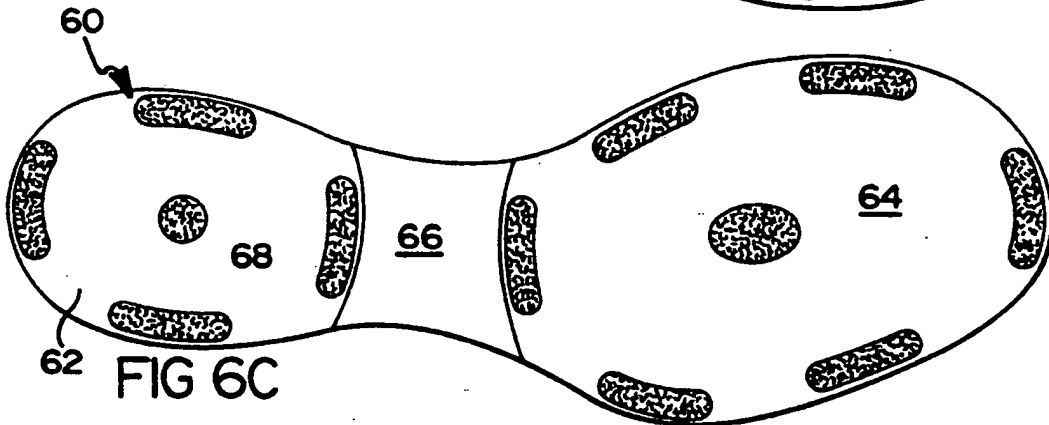
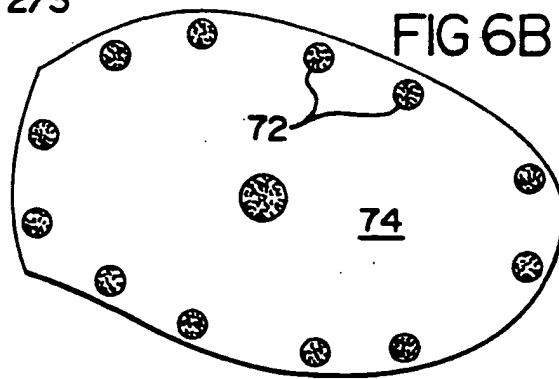


FIG 6C

FIG 7A

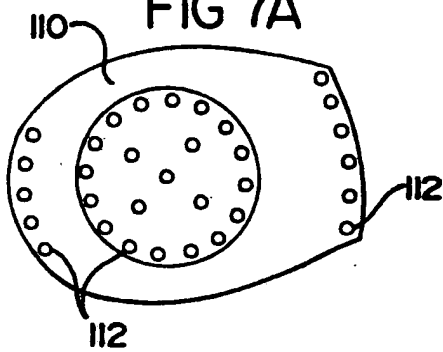


FIG 7B

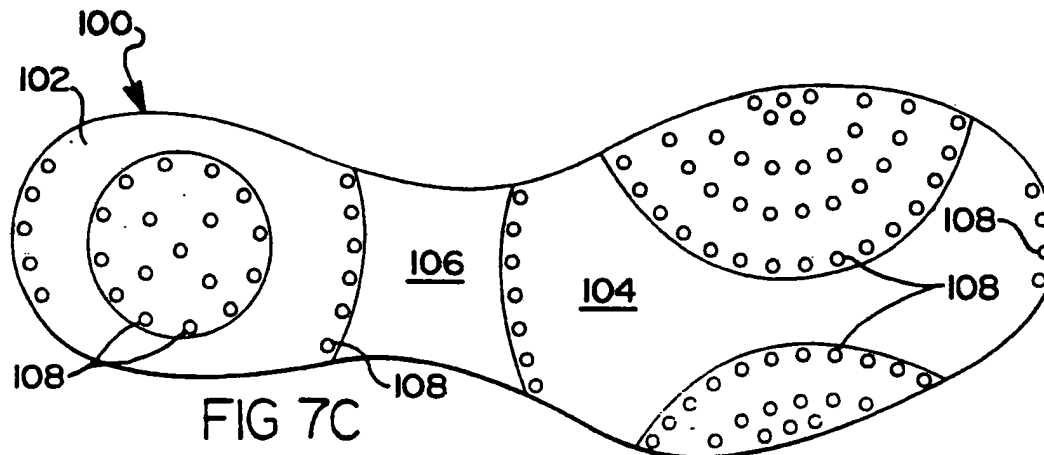
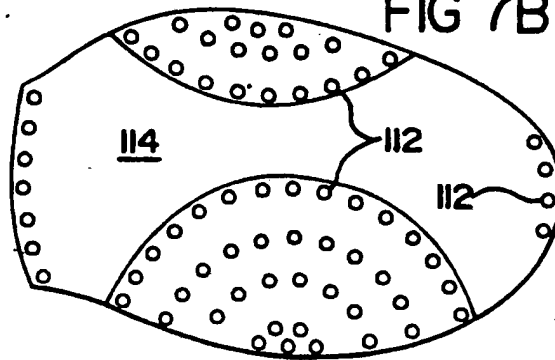


FIG 7C

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FIG 6D

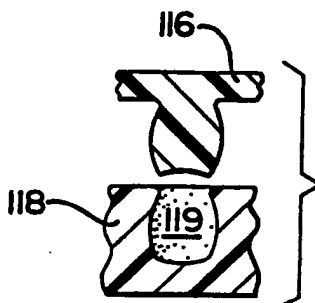
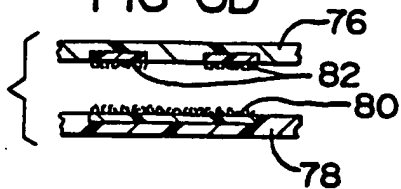


FIG 7D

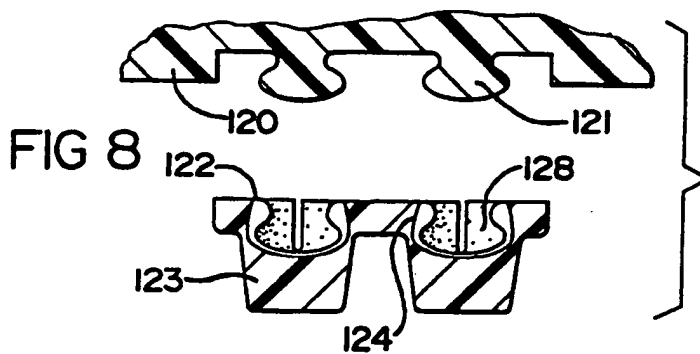


FIG 8

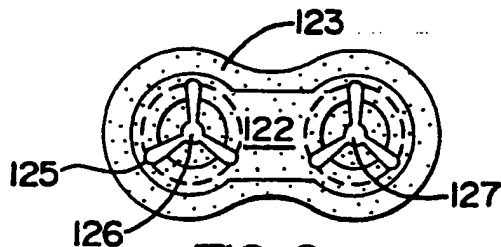


FIG 9

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US92/03053

A. CLASSIFICATION OF SUBJECT MATTER

IPC(5) : A43D 5/00

US CL : 36/134, 67R, 59R

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 36/67A, 67D, 61, 62, 126, 127, 128, 129

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<u>X</u> Y	US, A, 4,414,763 (BENTE) 15 November 1983, see entire document.	1,3-5,9,10, <u>12-14,18</u> 2,7,8,11,16,17
X	US, A, 3,672,077 (COLES) 27 June 1972, see entire document.	1,6,10,15
A	US, A, 3,526,976 (JACOBS) 08 September 1970.	
A	US, A, 3,583,082 (JORDAN, JR.) 03 June 1971.	
A	US, A, 4,262,434 (MICHELOTTI) 21 April 1981.	
A	US, A, 4,492,047 (ARFF) 08 January 1985.	
A	US, A, 4,633,600 (DASSLER ET AL) 06 January 1987.	
A	US, A, 4,644,672 (DASSLER ET AL) 24 February 1987.	
A	EP, A, 0,090,884 (BENTE) 12 October 1983.	

☐ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be part of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*A* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

22 JULY 1992

Date of mailing of the international search report

19 AUG 1992

 Name and mailing address of the ISA/
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INTERNATIONAL SEARCH REPORT

International application No.
PCT US92 03053

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

An athletic shoe (10) having break-away cleats on the ^{shoe} sole (14) including releasably engageable connection units (18) portions (24 and 26) of the sole.